NASA'S MISSION TO PLANET EARTH

EARTH PROBES

DATA INFORMATION SYSTEM

EOS

EARTH OBSERVING SYSTEM

Science Data Server CSCI Review
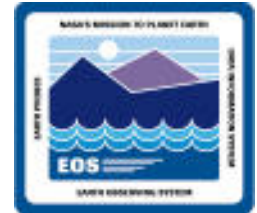
Jan Dreisbach
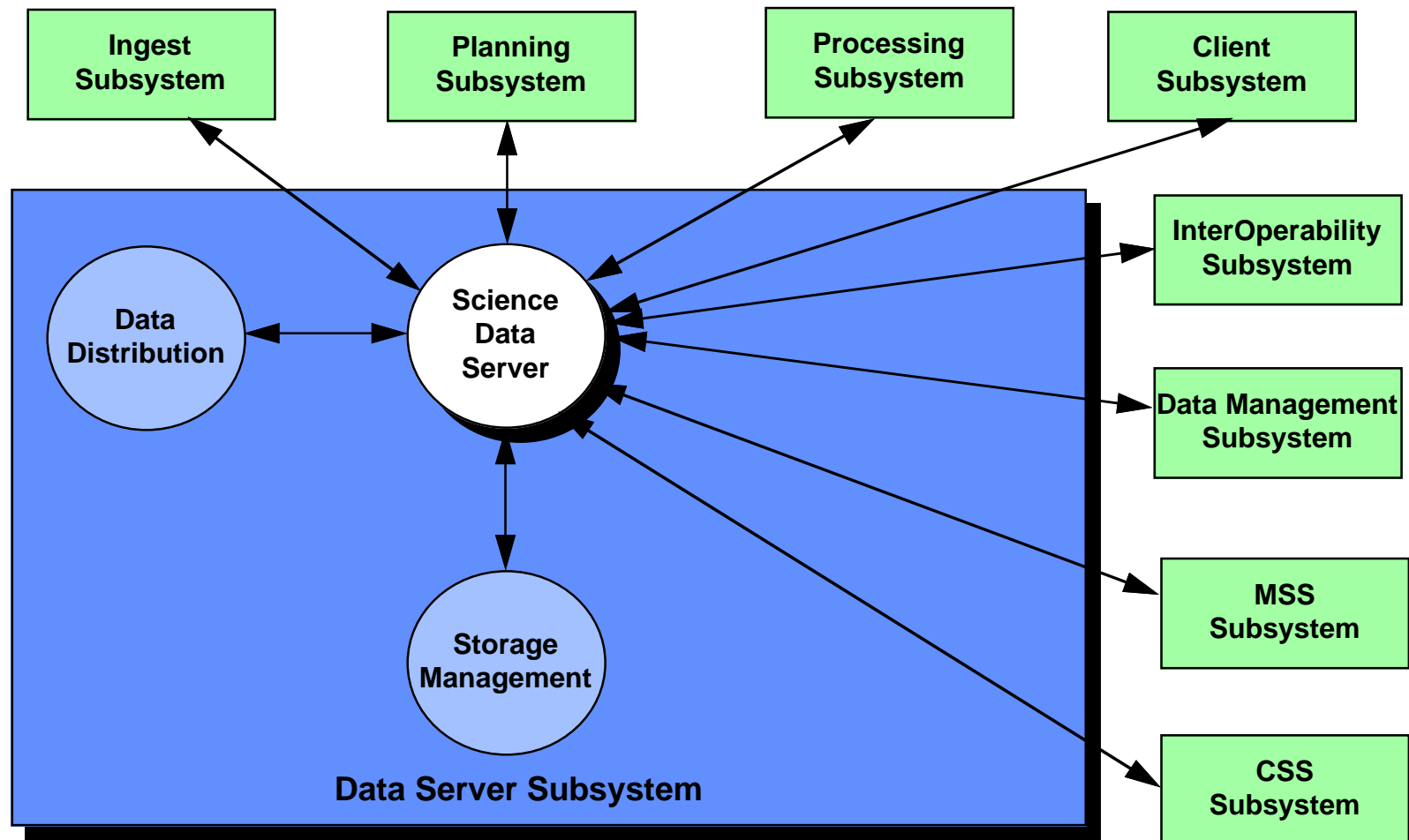
jdreisba@eos.hitc.com

13 June 1996

Agenda

- **Context**

- **Release B Capabilities**

- **Software CSCs**

- **COTS Selections**

- **High Level HW/SW Physical Design**

- **Detailed HW/SW Architecture**

- **Status of Design Topics**

- **Detailed Design**

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Release B Capabilities

ESDT-Related Work

- **New ESDTs - 115 (Total of 173)**
- **Extended Services**
    - **e.g., subsetting, on-demand processing, etc.**
- **Multi-State Granule**
- **Versioning**

SDSRV Internal Infrastructure

- **Suspend and Resume Sessions**
- **Changing Request Priorities**
- **Metadata Problem Reports**
- **ORDBMS Usage**
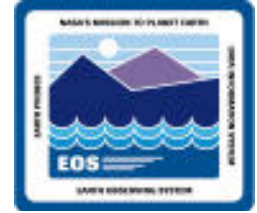- **Resource Utilization Reporting**
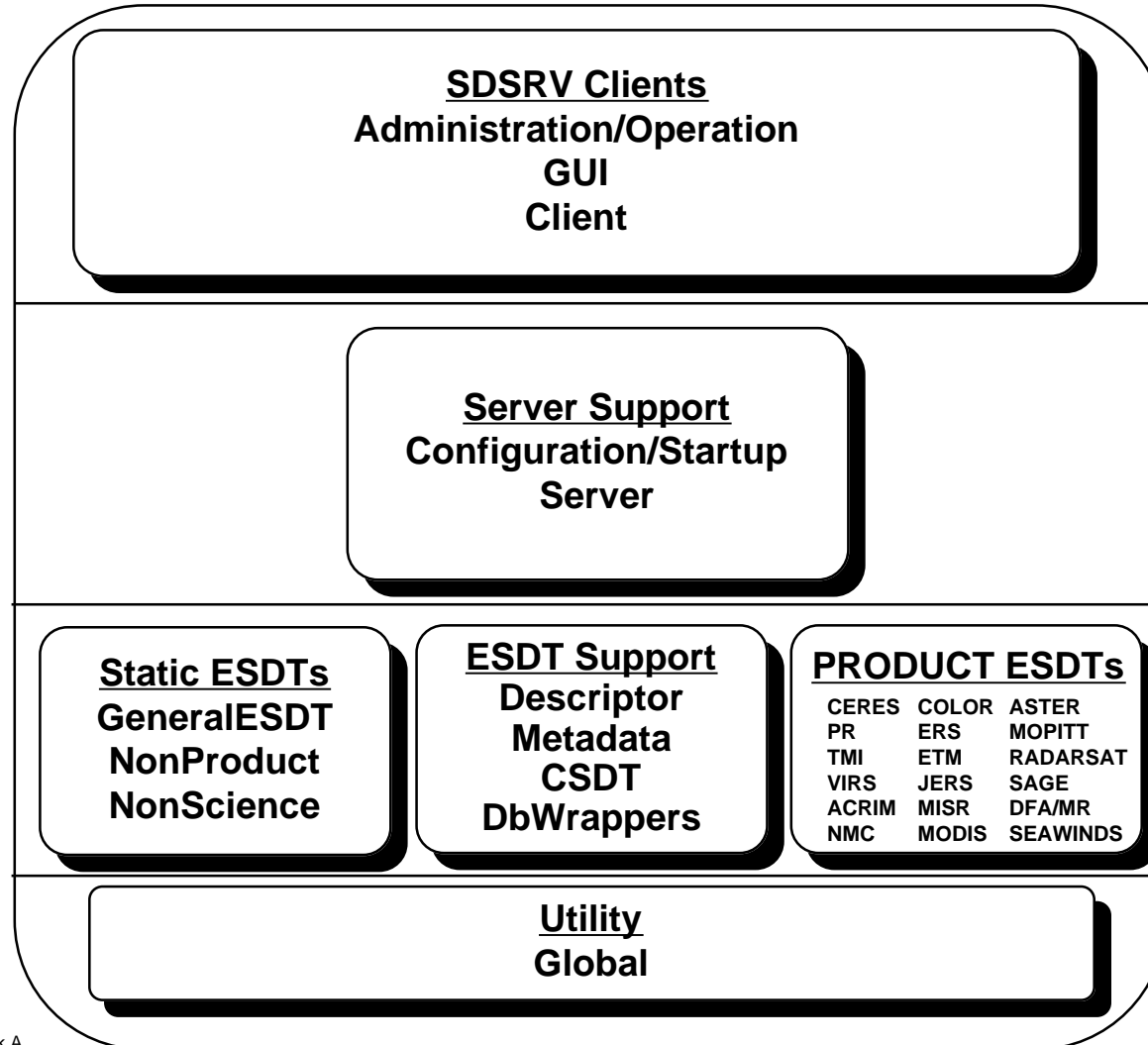- **Request Partitioning**

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Software CSCs

SDSRV Clients
Administration/Operation
GUI
Client

Server Support
Configuration/Startup
Server

Static ESDTs
GeneralESDT
NonProduct
NonScience

ESDT Support
Descriptor
Metadata
CSDT
DbWrappers

PRODUCT ESDTs

CERES	COLOR	ASTER
PR	ERS	MOPITT
TMI	ETM	RADARSAT
VIRS	JERS	SAGE
ACRIM	MISR	DFA/MR
NMC	MODIS	SEAWINDS

Utility
Global

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High Level HW/SW Physical Design

Three Processes

- **ScienceDataServer**
  - Process supporting the access to the advertised data type services as well as the implementations of those services.

- **SDSRVAdmin**
  - Supports the SDSRV Administrators and Operators. Primarily access to configuration of the SDSRV and monitor and control of SDSRV processing.

- **COTS Database Engine (Illustra)**
 - Commercial off-the-shelf ORDBMS used for storing and searching metadata.
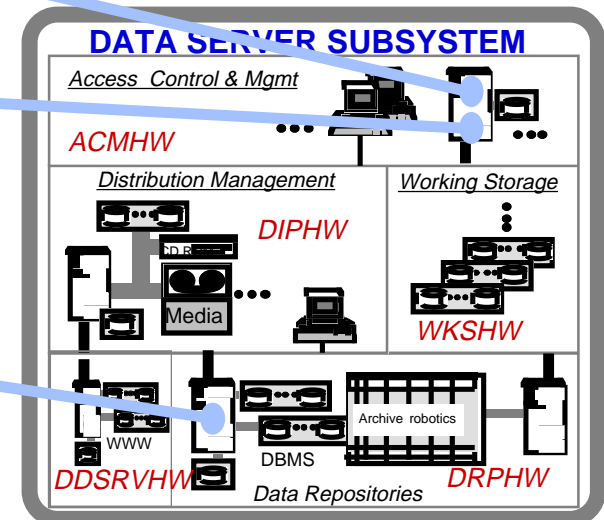
One Library

- **SDSRVClient Library**
  - Software toolkit library for use by SDSRV Client applications for connecting to and interacting with the SDSRV.

DATA SERVER SUBSYSTEM

Access Control & Mgmt

ACMHW

Distribution Management

DIPHW

Working Storage

WKSHW

Media

WWW

DBMS

Archive robotics

DDSRVHW

Data Repositories

DRPHW

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Detailed HW/SW Architecture

706-CD-005-001 Day 1 Book A

JD1-12
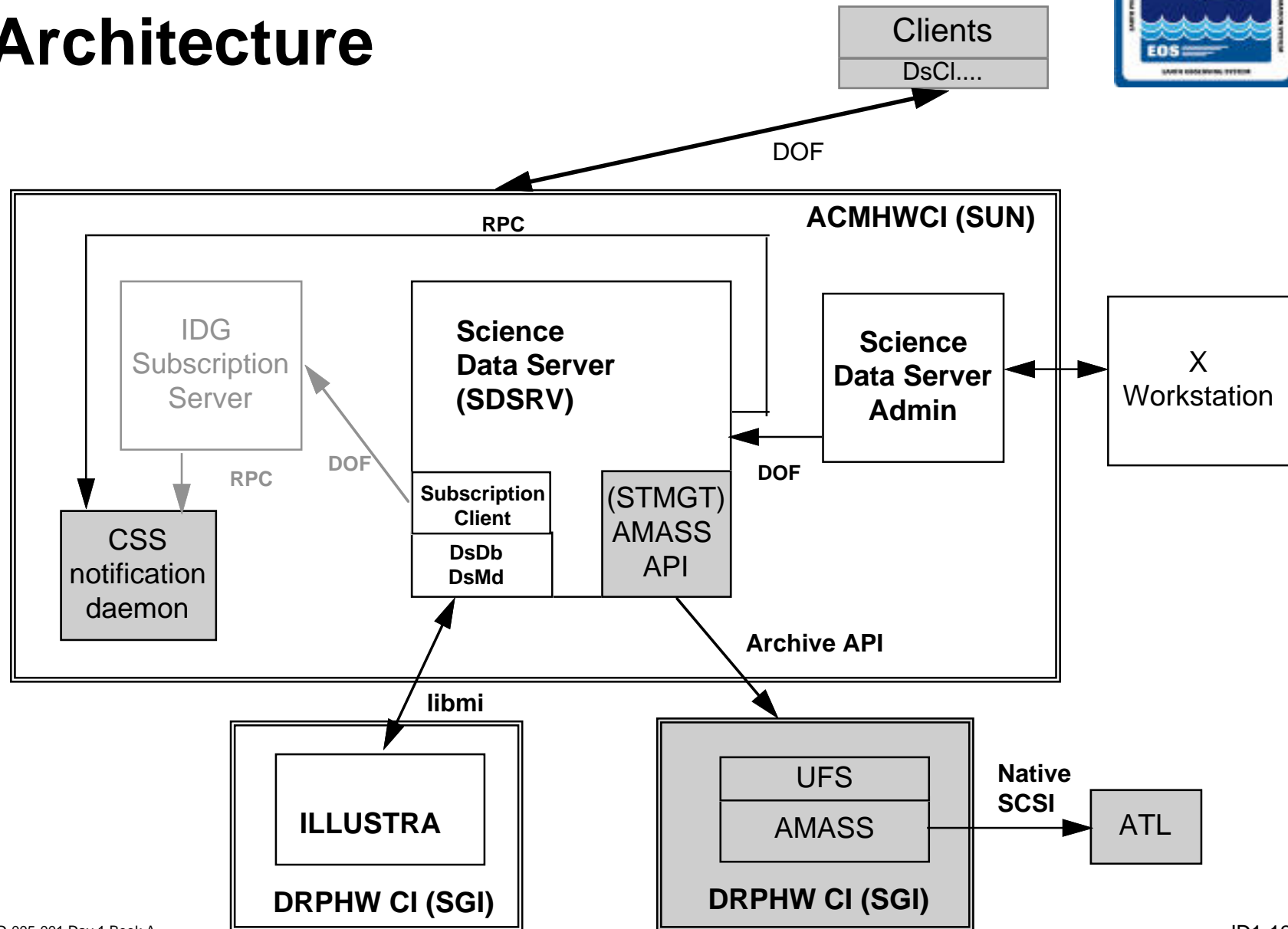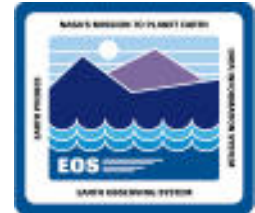
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Status of Design Topics

IDR-B Issues

Action Item	Issue, Comment, Question, AI, or RID	Assignment	Comment
2	Want to be able to define data quality level in a subscription.	ECS	CDR B RID #45 (CSS)
6	What is going to be in the metadata? (What is expected to be in the metadata by ECS?)	ECS	Completed In DID 311
6	Provide URL for ESDT definitions.	ECS	Complete
33	How do we group or specify which ESDTs are needed for a specific data product?	ECS	Closed (Appendix F - DID 304)
34	Where does the doc/presentation discuss the population of Lim/DIM with "granual packages"? How can the pieces of a granual package be tracked?	ECS	IDR-B RID#11
51	Emphasize Update loading in Illustra prototyping. Should interact with DAAC experience over performance expectations. (Lyn offered data.)	ECS	Closed
53	Dataserver at the OPS workshop needs to discuss the list of "scripted" subscription actions in response to events that ECS provides upon delivery, and what DAACs are expected to write.	Steve Marley	Conducted Ops Workshop

RID #5 Meeting Actions

Action Item	Title	Description	Assignment	Comments
4	CDR Functionality Demonstrations	ECS should include a scenario showing how PDPS, DSS and Client work together. ECS should also present detailed scenarios of the virtual product concept using ASTER as an example.	CDR	Answered by Aster On-Demand Scenario and M&O Operability Scenarios.
5	DAR ID from Japan	Is the DAR ID actually in the metadata?	ECS	Closed at 4/5 Meeting.
6	Detailed Subscription Scenario	Provide detailed scenarios for how the subscriptions work. e.g., a) how to subscribe to metadata update service, b) belated discovery of corrupted data, and c) manual process of looking up subscribers.	DID305/CDR	Subscription DIT, CDR B RID #45.
7	Notification of Users When Products Change	How to look up all subscriptions going to folks who are PGE-related and all folks who are just science users.	ECS	IDG - Subscription DIT.
8	Different Classes for Data Access	Lyn Oleson suggested DSS might want to consider different classes of users. Need for a flag for data validation and verification prior to access by users?	ECS	Closed - IDR-B RID #11.
10	Coordination for Data and Browse Ingest	Please provide scenarios that show realistically how metadata and data arrive over time.	ECS	Answered by Insert/Browse Scenario Back-up Material.
11	Feedback from Community About "browse" Definition	Science community has been unable to completely define what and if a browse product is for each of the data products.	ESDIS	Open - referred to DSWG.
14	Temporary URs	A scenario should be provided describing the steps in a subset request showing the transformation state of the granule.	ECS/CDR	Answered by 3DR Subsetting Scenario.
17	Coordination for Metadata Problem Reporting	We need to be sure that CIDM knows how to handle the DSS metadata problem report and that there is no confusion with Trouble Tickets. Need to assess the role of metadata problem report in the system context.	ECS	Accepted by MSS. Mapped to existing MSS capability, User Contact Log.

RID #5 Meeting Actions (cont.)

Action Item	Title	Description	Assignment	Comments
18	Description of DAR Requirements	What subsystem at CDR will describe the DAR scenario? Associated with the DAR, what "up front" capabilities will be available in the client GUI tool?	CDR	Answered by DID 313-CD-006-002, DAR Scenario (Section 4.1.11), DID 305-CD-026-002, Aster On-Demand Event Trace (Section 4.4.19).
19	How Algorithms are Made Available	A scenario for acquiring the Science SW Algorithm Programs from the archive should be included in the documentation. Includes several issues.	ECS	Answered by 3DR SSAP Scenario Back-up Material.
20	Description of How New Product Versions are Handled	State explicitly what versioning is and what the requirements are for it. Show how the system is designed to handle it.	CDR	ESDIS will describe the concept of the functional and GUI admin. procedures for creating new versions of ESDT and Granules.
23	How Many Data Granules Represented in DB Benchmark?	How is the Benchmark going to simulate the varying data types representative of Releases A and B? Please include the number of each different type in the study (how many rows per group?)	CDR	Closed at 4/5 Meeting.
24	How Does Subscription Processing Impact Database Performance?	There was a question about the distribution of the 100 users being simulated. Several suggestions were made.	ECS	Closed at 4/5 Meeting.
26	How do Priorities in Data Server Allow Management of Limited Resources?	Chris Harris requested that we determine what the dynamics of changing priorities are and how many different types of classes can you have at a given time? How many flavors of users are there?	ECS	Answered by 3DR Changing Request Priority Scenario.
27	How is Priority Information in DARs and in On-Demand Processing Passed to Processing?	DAR processing scenarios were discussed; a controversial point concerned how the user profile was passed to the SDSRV. Oleson stressed how different levels of users may submit a DAR.	ECS	Answered by 3DR Changing Request Priority Scenario.
29	QA for On-Demand Processing and Re-Generation of Higher Level Products After Data Restoration	Check on QA plans both in regular processing and in the on-demand processing.	ECS	Needs Clarification.

Ops Workshop Action Items

Action Item	Title	Description	Assignment	Comments
10	View of Inventory	Desire to control the view of the inventory on a granule/file level. Explore a public vs. private (restricted) advertising of data availability as a means of restricting access to a targeted granule/file.	ECS	Addressed by 3DR Multi-State Granule Scenario
11	EOS Products	Need to identify file dependencies on EOS products & VO migrated data.	ECS	Need Clarification
12	Partial Failure	Is requester notified of a partial failure of a request?	ECS	Closed
54	Sybase to Illustra Switchover	What will happen if during the switchover from Sybase to Illustra, it is discovered at a later date that the Illustra DB is corrupted to the point that reverting back to Sybase without lost data is not possible?	ECS	Closed at CDR-B
55	Sybase to Illustra Switchover	Consider the number of granules as well as volume for the Sybase to Illustra and VO transition include in the white paper	ECS	Closed at CDR-B
57	Fix Scenario Disconnects	Fix any disconnects between this scenario and the subscription event error/resolution scenarios.	ECS	Closed
73	Order Processing Cancellation	At what point in processing is it too late to cancel an order?	ECS	Closed
78	Data Access Restrictions	Are data access restrictions reflected in the metadata model? If not, they should be.	ECS	Closed
85	Group Notification	Need a scenario to show how group notification will be handled. (How do you do a batch notify of a problem?)	ECS	Reassigned to MSS

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Detailed Design
Static Object Models

The following static object models can be found in 430-TP-008 (SDSRV and DDSRV Change Pages to DSS 305 Document):

Section	Class Categories
4.3.1	Ac (ACRIM)
4.3.2	Ad (Administration)
4.3.3	As (ASTER)
4.3.4	Av (AVHRR)
4.3.5	Ba (BAAS I/F)
4.3.6	Ce (CERES)
4.3.7	Cl (SDSRV Client)
4.3.8	Cn (Configuration)

Detailed Design
Static Object Models (cont.)

The following static object models can be found in 430-TP-008
(SDSRV and DDSRV Change Pages to DSS 305 Document):

Section	Class Categories
4.3.9	Co (Color)
4.3.10	Cs (CSDT)
4.3.11	Da (DAO)
4.3.12	Db (Database)
4.3.13	De (Descriptors)
4.3.14	Dm (DFA/MR)
4.3.15	Er (ERS)
4.3.16	Et (ETM)

Detailed Design
Static Object Models (cont.)

The following static object models can be found in 430-TP-008 (SDSRV and DDSRV Change Pages to DSS 305 Document):

Section	Class Categories
4.3.17	Ge (General ESDT)
4.3.18	Gl (Global)
4.3.19	Gu (GUI)
4.3.20	Gv (Ground-based Validation Radar)
4.3.21	Je (JERS)
4.3.22	Md (Metadata)
4.3.23	Mo (MODIS)
4.3.24	Mp (MOPITT)

Detailed Design
Static Object Models (cont.)

The following static object models can be found in 430-TP-008 (SDSRV and DDSRV Change Pages to DSS 305 Document):

Section	Class Categories
4.3.25	Ms (MISR)
4.3.26	Nm (NMC)
4.3.27	Np (Non-Product ESDTs)
4.3.28	Ns (Non-Science ESDTs)
4.3.29	Pr (PR)
4.3.30	Ra (RADARSAT)
4.3.31	Sa (SAGE)
4.3.32	Sh (Shared)

Detailed Design
Static Object Models (cont.)

The following static object models can be found in 430-TP-008
(SDSRV and DDSRV Change Pages to DSS 305 Document):

Section	Class Categories
4.3.33	Sr (Server)
4.3.34	Sw (SeaWinds)
4.3.35	Tm (TMI)
4.3.36	Vi (VIRS)

Detailed Design
Dynamic Object Models

The following event traces can be found in 430-TP-008
(SDSRV and DDSRV Change Pages to DSS 305 Document):

Figure	Event Trace
4.5	Return Request Status
4.5.1	Acquiring an ESDT
4.5.2	ASTER OnDemand Process Request
4.5.3	Asynchronous Status Updates
4.5.4	Deleting a Metadata Entry
4.5.5	Catalog Insert Collection Metadata
4.5.6	Catalog Insertion of Metadata
4.5.7	Catalog Search
4.5.8	Catalog Updating Metadata
4.5.9	Changing a Request Priority

Detailed Design
Dynamic Object Models (cont.)

The following event traces can be found in 430-TP-008
(SDSRV and DDSRV Change Pages to DSS 305 Document):

Figure	Event Trace
4.5.10	Client Browsing
4.5.11	Client Connecting to a Data Server
4.5.12	Client Request Submission
4.5.13	Client Searching
4.5.14	Deleting a Queued Request
4.5.15	Inserting Composite ESDT
4.5.16	Inserting a New ESDT
4.5.17	Inserting Single ESDT
4.5.18	Instantiating an ESDT

Detailed Design
Dynamic Object Models (cont.)

The following event traces can be found in 430-TP-008
(SDSRV and DDSRV Change Pages to DSS 305 Document):

Figure	Event Trace
4.5.19	Handling Multi-State Granules
4.5.20	Operator Viewing Queued Requests
4.5.21	Server Handling a Browse Request
4.5.22	Server Handling of a Search Request
4.5.23	Server Request Handling
4.5.24	Startup of a Science Data Server
4.5.25	Subsetting an ESDT
4.5.26-33	Suspend/Resume a SDSRV Session
4.5.34	Update Server Configuration
4.5.35	Validating Metadata